

## USAGE PATTERN OF ICT TOOLS BY THE FARM VARSITY STUDENTS IN INDIA

**T. SRINIVAS<sup>1</sup>, P. PUNNA RAO<sup>2</sup>, T. VENKATA SRIDHAR<sup>3</sup>,  
T. RAMESH BABU<sup>4</sup> & N. SUNDERA RAO<sup>5</sup>**

<sup>1</sup>Professor (Academic & Education), Office of Dean of Agriculture, Acharya N G Ranga Agricultural University,  
Lam, Guntur, Andhra Pradesh, India

<sup>2</sup>Principal Agriculture Information Officer, Acharya N G Ranga Agricultural University, Lam, Guntur,  
Andhra Pradesh, India

<sup>3</sup>Associate Professor (Academic & Education), Office of Dean of Agriculture, Acharya N G Ranga Agricultural University,  
Lam, Guntur, Andhra Pradesh, India

<sup>4</sup>Professor (Entomology) & Head, Agricultural College, Acharya N G Ranga Agricultural University,  
Tirupati, Andhra Pradesh, India

<sup>5</sup>Senior Research Fellow, ICAR-Extramural Project, Office of Dean of Agriculture, Acharya N G Ranga Agricultural  
University, Lam, Guntur, Andhra Pradesh, India

### ABSTRACT

*The present study was conducted in seven farm universities of Andhra Pradesh, Telangana, Bihar and Jharkhand states. Data were collected from 1051 students of 18 colleges pursuing Agriculture, Horticulture and Animal Husbandry courses. The interactive white board, television and projector were used daily by most of the students, while e-library and university website were occasionally used. Daily usage of ICT resources was more in Bihar followed by Telangana, Jharkhand and AP. The occasional usage of ICTs was more in AP followed by Telangana and at par in other two states. The availability of personal ICT tools was more in Jharkhand followed by Telangana, Bihar and AP. The availability of mobile/tablet was high in all states, while PC/Laptop and net connectivity was more with students of Jharkhand.*

**KEYWORDS:** Information and Communication Technologies, Agricultural Universities, Usage Pattern & Purpose of Use

**Received:** Jul 26, 2018; **Accepted:** Aug 16, 2018; **Published:** Sep 07, 2018; **Paper Id.:** IJASROCT20184

### INTRODUCTION

Education is a dynamic force in the life of every individual, influencing his physical, mental, emotional, social and ethical developments. Recognizing the important role of education as a main driver of development and in achieving other proposed Sustainable Development Goals (SDG), the vision proposed by SDG4 is ensures 'inclusive and equitable quality education and promote lifelong learning opportunities for all' (Incheon declaration, 2030 of World Education Forum, 2015). To achieve the target of SDG4, transformation is needed in education, where Information and Communication Technologies (ICTs) must be more harnessed to strengthen education systems more so, in agricultural education also.

The Information and Communication Technology (ICT) is a very broad term focusing on improving the quality, quantity and speed of information to reach the students in an educational system (Bindu, 2016). Agricultural education also requires more of such innovations to project the modern and complex concepts with high comprehension and allured vision among the students. ICT provides a great flexibility in education to ensure that, learners are able to access knowledge regardless of space and time (Akele, 2013; Angadi, 2014). Distance education programmes, which are very popular these days gained momentum because of ICT. Hence, the ICT-empowered education system will eventually result in the democratization of education, predominantly in developing countries like India. Effective utilization of ICTs for the educational purpose will be able to bridge the digital divide that exists in the nation today. With this background, the present project was carried out with an objective of assessing the ICT resources, in terms of usage pattern by the students; personal ICT tools used and purpose of using tools.

## **MATERIAL AND METHODS**

The study was conducted in the seven Universities of India located in Andhra Pradesh, Telangana, Bihar and Jharkhand states. The Acharya N G Ranga Agricultural University (ANGRAU), Sri Venkateswara Veterinary University (SVVU) and Dr YSR Horticultural University (DrYSRHU) were selected from Andhra Pradesh. The Professor Jayasankar Telangana State Agricultural University (PJ TSAU) was selected from Telangana. Two universities, namely Bihar Agricultural University (BAU) and Dr Rajendra Prasad Central Agricultural University (DrRPCAU) were selected from Bihar, while Birsa Agricultural University (BiAU) was selected from Jharkhand for the present study.

Three colleges namely Agricultural College, Bapatla; S. V. Agricultural College, Tirupati and Agricultural College, Mahanadi were selected purposively from Acharya N G Ranga Agricultural University; College of Veterinary Science, Tirupati and NTR College of Veterinary Science were selected from Sri Venkateswara Veterinary University, where as College of Horticulture was selected from Dr YSR Horticultural University. Similarly three colleges namely College of Agriculture, Rajendranagar, Agricultural College, Jagityal and College of Agriculture, Aswaraopeta were selected from Professor Jayasankar Telangana State Agricultural University of Telangana. Bihar Agricultural College, College of Dairy Technology and Bihar Veterinary Colleges were selected from Bihar Agricultural University. Tirhut College of Agriculture, Dholi; College of Home Science, Pusa; College of Fisheries, Dholi and College of Basic Science and Humanities, Pusa were selected from Dr Rajendra Prasad Central Agricultural University of Bihar. Five Colleges, namely Agricultural College, Veterinary College, Biotechnology College, College of Forestry and College of Agri-Business Management were selected from Birsa Agricultural university of Jharkhand. Thus, a total of eighteen colleges were selected from the four states of India for the study.

Out of 1051 student respondents, 402 were from ANGRAU, 130 from Sri. Venkateswara Veterinary University, 39 students from Dr. YSR Horticultural University, 158 from Prof. Jayasankhar Telangana State Agricultural University, 87 from Bihar Agricultural University, 92 from Dr. Rajendra Prasad Central Agricultural University and 143 students were from Birsa Agricultural University. Data were collected from the respondents through structured questionnaires. Frequency and percentages were used for analysis and interpretation of results.

## RESULTS AND DISCUSSIONS

### Usage Pattern by the Students

The average use of ICT tools by students of three universities in the state of Andhra Pradesh is presented in Table1. The students of Andhra Pradesh have used ICT tools like interactive white board (47.11%) and television (34.85%) on daily basis. Tools like projector (22.77%) Computer (42.56%), university web site (49.74%) and e-library (32.05%) were used occasionally. On other hand, Digital Student Report card (100) and e-portfolio (100) were never used while teleconference (88.09%), videoconference (81.44%), Virtual class rooms (60.42%) and Wi-Fi (50.96%) were never used by most of the students. The average usage of ICT tools in the state of Andhra Pradesh indicated that majority of the students (48.93%) never used ICT tools, while 24.21 per cent of the students used ICT tools occasionally, followed by 17.24 per cent of the students agreed that they use ICT tools daily.

**Table 1: Usage of ICT Tools by the Students of Andhra Pradesh**

S. No	ICT Tools and Materials	Andhra Pradesh (n=571)									
		Never		Occasionally		Monthly		Weekly		Daily	
		F	%	F	%	F	%	F	%	F	%
1	Interactive White Board	125	21.89	155	27.15	5	0.88	17	2.98	269	47.11
2	Computer	47	8.23	243	42.56	16	2.80	130	22.77	135	23.64
3	Projector	95	16.64	210	36.78	24	4.20	112	19.61	130	22.77
4	Television	179	31.35	137	23.99	18	3.15	38	6.65	199	34.85
5	Video Conference	465	81.44	86	15.06	7	1.23	6	1.05	7	1.23
6	Teleconference	503	88.09	46	8.06	1	0.18	7	1.23	14	2.45
7	E-Portfolio	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
8	Wi-Fi / LAN	291	50.96	149	26.09	10	1.75	15	2.63	106	18.56
9	Digital Student Report Card	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
10	Virtual Class Rooms	345	60.42	83	14.54	6	1.05	20	3.50	117	20.49
11	E-Library	162	28.37	183	32.05	27	4.73	80	14.01	119	20.84
12	University Website	127	22.24	284	49.74	37	6.48	60	10.51	63	11.03
	<b>Average</b>	<b>279</b>	<b>48.93</b>	<b>138</b>	<b>24.21</b>	<b>13</b>	<b>2.35</b>	<b>42</b>	<b>7.27</b>	<b>98</b>	<b>17.24</b>

The data (Table2) revealed that students of PJTSAU in Telangana State have used ICT tools like projector (62.66%), Wi-Fi (55.70%), interactive white board (48.10%), computer (46.20%) and television (36.08%) on daily basis. The occasional use was observed only with university web site (47.47%). On other hand, tools like Digital Student Report card and e-portfolio were never used by any of the students. While, tools like teleconference (86.71%), video conference (84.18%), virtual class rooms (48.73%) and e-library (39.24%) were never used by most of the students. The average use of ICT tools in the state of Telangana indicate that 46.15 per cent of the students never used ICT tools, followed by 23.89 per cent used daily and 20.68 per cent used occasionally.

**Table 2: Usage of ICT Tools by the Students of Telangana.**

S. No	ICT Tools and Materials	Telangana (n=158)									
		Never		Occasionally		Monthly		Weekly		Daily	
		F	%	F	%	F	%	F	%	F	%
1	Interactive White Board	35	22.15	44	27.85	0	0.00	3	1.90	76	48.10
2	Computer	15	9.49	33	20.89	13	8.23	24	15.19	73	46.20
3	Projector	17	10.76	28	17.72	4	2.53	10	6.33	99	62.66
4	Television	54	34.18	26	16.46	4	2.53	17	10.76	57	36.08
5	Video Conference	133	84.18	19	12.03	3	1.90	1	0.63	2	1.27
6	Teleconference	137	86.71	17	10.76	1	0.63	0	0.00	3	1.90
7	E-Portfolio	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
8	Wi-Fi / LAN	37	23.42	22	13.92	3	1.90	8	5.06	88	55.70
9	Digital Student Report Card	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
10	Virtual Clas Rooms	77	48.73	50	31.65	6	3.80	5	3.16	20	12.66
11	E-Library	62	39.24	49	31.01	5	3.16	23	14.56	19	12.03
12	University Website	36	22.78	75	47.47	19	12.03	16	10.13	12	7.59
	<b>Average</b>	<b>73</b>	<b>46.15</b>	<b>33</b>	<b>20.68</b>	<b>5</b>	<b>3.38</b>	<b>9</b>	<b>5.91</b>	<b>38</b>	<b>23.89</b>

The average usage of ICT tools by the students of Bihar state revealed that the ICT tools like interactive white Board (49.16%), Computer (39.66%) and television (51.96%) daily (Table 3). University website (41.90%) and projector (40.22%) were the major ICT tools used occasionally. On other hand, e-portfolio (100.0%), teleconference (77.33%), video conference (69.83%), virtual class rooms (67.04%), e-library (45.81%), digital student report card (42.48%) and Wi-Fi (39.11%) were not used by most of the students. The average usage of ICT tools by the students of Bihar state indicated that 44.32 per cent of the students never used ICT tools, 24.63 per cent used daily, 19.41 per cent used occasionally, 8.43 per cent used weekly and 3.21 per cent used monthly.

**Table 3: Usage of ICT Tools by the Students of Bihar**

S. No	ICT Tools and Materials	Bihar (n=179)									
		Never		Occasionally		Monthly		Weekly		Daily	
		F	%	F	%	F	%	F	%	F	%
1	Interactive White Board	56	31.28	25	13.97	2	1.12	8	4.47	88	49.16
2	Computer	8	4.47	63	35.20	8	4.47	29	16.20	71	39.66
3	Projector	9	5.03	72	40.22	7	3.91	40	22.35	51	28.49
4	Television	42	23.46	32	17.88	2	1.12	10	5.59	93	51.96
5	Video Conference	125	69.83	30	16.76	4	2.23	7	3.91	13	7.26
6	Teleconference	142	79.33	22	12.29	6	3.35	5	2.79	4	2.23
7	E-Portfolio	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
8	Wi-Fi / LAN	70	39.11	31	17.32	3	1.68	10	5.59	65	36.31
9	Digital Student Report Card	76	42.46	7	3.91	0	0.00	1	0.56	3	1.68
10	Virtual Class Rooms	120	67.04	6	3.35	10	5.59	11	6.15	32	17.88
11	E-Library	82	45.81	19	10.61	4	2.23	23	12.85	51	28.49
12	University Website	11	6.15	75	41.90	16	8.94	29	16.20	48	26.82
	<b>Average</b>	<b>79</b>	<b>44.32</b>	<b>35</b>	<b>19.41</b>	<b>6</b>	<b>3.21</b>	<b>15</b>	<b>8.43</b>	<b>44</b>	<b>24.63</b>

The students of Jharkhand (Table. 4) have used ICT tools like interactive white board (60.14%) and computer (32.87%) on daily basis. Projector (34.97%) and university website (41.96%) were occasionally used by students, while Digital Student Report card (100) and e-portfolio (100) were never used by the students. On the other hand, teleconference

(74.13%), video conference (71.33%), Virtual class rooms (65.73%), e-library (62.24%) and television (40.56%) were not used by most of the students. The average usage of ICT tools by the agricultural students of Jharkhand state indicated that majority of the students (48.72%) never used ICT tools while 23.48 per cent students used occasionally, followed by 17.54 per cent students used daily.

**Table 4: Usage of ICT Tools by the Students of Jharkhand**

S. No	ICT Tools and Materials	Jharkhand (n=143)									
		Never		Occasionally		Monthly		Weekly		Daily	
		F	%	F	%	F	%	F	%	F	%
1	Interactive White Board	5	3.50	36	25.17	5	3.50	11	7.69	86	60.14
2	Computer	16	11.19	47	32.87	3	2.10	30	20.98	47	32.87
3	Projector	17	11.89	50	34.97	6	4.20	27	18.88	43	30.07
4	Television	58	40.56	40	27.97	4	2.80	14	9.79	27	18.88
5	Video Conference	102	71.33	30	20.98	7	4.90	1	0.70	3	2.10
6	Teleconference	106	74.13	30	20.98	1	0.70	0	0.00	6	4.20
7	E-Portfolio	128	89.51	9	6.29	1	0.70	1	0.70	4	2.80
8	Wi-Fi / LAN	57	39.86	44	30.77	2	1.40	6	4.20	34	23.78
9	Digital Student Report Card	127	88.81	11	7.69	0	0.00	1	0.70	4	2.80
10	Virtual Class Rooms	94	65.73	19	13.29	1	0.70	12	8.39	17	11.89
11	E-Library	89	62.24	27	18.88	5	3.50	10	6.99	12	8.39
12	University Website	37	25.87	60	41.96	21	14.69	7	4.90	18	12.59
	<b>Average</b>	<b>70</b>	<b>48.72</b>	<b>34</b>	<b>23.48</b>	<b>5</b>	<b>3.26</b>	<b>10</b>	<b>6.99</b>	<b>25</b>	<b>17.54</b>

The average utilization of the ICT resources by the students of different states is presented in Table5. The results indicated that the daily usage of ICT resources was more in Bihar (24.63%), followed by Telangana, Jharkhand and Andhra Pradesh. The students of Andhra Pradesh state have poor utilization of ICT resources (48.93%) followed by Jharkhand (48.72%), Telangana (46.15%) and Bihar (44.32%). The occasional usage of ICT resources was high in Andhra Pradesh (24.21%), followed by Jharkhand that was almost similar in other two states. The average usage of ICT resources indicated that 47.03 per cent never used ICT resources followed by occasional use (21.95%). However, 20.83 per cent of the students use ICT tools daily.

The availability and usage of ICT tools is highly useful in increasing the accessibility of students to learning, since they help to educate students from anytime and anywhere.

**Table 5: Usage of ICT Tools by the Students in Different States**

S. No	State	Usage (n=1051)									
		Never		Occasionally		Monthly		Weekly		Daily	
		F	%	F	%	F	%	F	%	F	%
1	Andhra Pradesh	279	48.93	138	24.21	13	2.35	42	7.27	98	17.24
2	Telangana	73	46.15	33	20.68	5	3.38	9	5.91	38	23.89
3	Bihar	79	44.32	35	19.41	6	3.21	15	8.43	44	24.63
4	Jharkhand	70	48.72	34	23.48	5	3.26	10	6.99	25	17.54
	<b>Average</b>	<b>125</b>	<b>47.03</b>	<b>60</b>	<b>21.95</b>	<b>7</b>	<b>3.05</b>	<b>19</b>	<b>7.15</b>	<b>51</b>	<b>20.83</b>

#### Personal ICT tools Availability

The data pertaining to the availability of personal ICT resources with agriculture and allied students of four states was given in Table6. The results indicated that the availability of personal ICT tools were more with students of Jharkhand

state and more so with average availability of personal ICT resources. The availability of personal ICT tools like mobile/tablet was more (95.05%) followed by net connectivity (61.75%) and PC/laptop (41.58%). The overall availability of ICT personal tools is reasonably good (66.03%).

**Table 6: Distribution of Students of Study Area According to Availability of Personal ICT Tools**

S. No	Personal ICT Resources	Availability									
		Andhra Pradesh		Telangana		Bihar		Jharkhand		Total	
		F	%	F	%	F	%	F	%	F	%
1	Mobile/tablet	542	94.92	148	93.67	174	97.21	135	94.41	999	95.05
2	PC/Laptop	205	35.90	75	47.47	69	38.55	88	61.54	437	41.58
3	Net connectivity	296	51.83	109	68.99	124	69.27	120	83.92	649	61.75
	<b>Average</b>	<b>347</b>	<b>60.88</b>	<b>111</b>	<b>70.04</b>	<b>122</b>	<b>68.34</b>	<b>114</b>	<b>79.95</b>	<b>694</b>	<b>66.03</b>

### Usage of Social Media

Table 7 revealed that, the daily usage of social media tools was high with the students of the Bihar (26.90%) when compared with the students of the Jharkhand (25.57%), Telangana (16.00%) and Andhra Pradesh (14.86%). Fifty-five percent of the students of Andhra Pradesh and Telangana states and forty six percent of students of the Bihar and Jharkhand mentioned that they never used the social media. Students of the different universities of study areas used Facebook and Whatsapp daily, while twitter and blog were occasionally used. Social media tools like Wikipedia, Google groups and Google plus were never used. Nearly twenty percent of students of all states responded that they have used social media tools occasionally, and very few students mentioned that they used social media monthly.

**Table 7: Time Spent on Social Media by Students of Different States**

S. No	Social Media	Usage Pattern of Social Media (n=1501)									
		Never		Occasionally		Monthly		Weekly		Daily	
		F	%	F	%	F	%	F	%	F	%
1	Andhra Pradesh	316	55.34	116	20.29	15	2.60	39	6.91	85	14.86
2	Telangana	87	55.15	29	18.08	5	3.07	12	7.69	25	16.00
3	Bihar	83	46.21	29	16.36	4	2.31	15	8.22	48	26.90
4	Jharkhand	66	46.05	25	17.38	4	3.10	11	7.89	37	25.57

### Purpose of Usage of ICT Tools

Among the different states, the students of Andhra Pradesh ranked top and agreed that, on an average (89.22%) of the students used ICT tools for different purposes like research, keeping up to date subject information, to gain current and general knowledge, for seminar / workshop / conference presentations and exchange of ideas followed by Jharkhad (88.39%), Telangana (87.97%) and Bihar (84.34%) (Table 8). The data clearly indicates that, in all the states the students agreed that ICT tools are very important for usage of different purposes for their academic improvement. Highest number of students agreed that, ICTs were used to gain current and general knowledge information in the state of Andhra Pradesh (92.90 %), Jharkhand (93.01%) and Bihar (88.82%), while in Telangana (91.14%) for seminar / workshop / conference presentation. Disagree level among the four states for the usage of ICTs towards academic improvement purposes is less than 10.00 %, however among four states, Telangana and Bihar recorded highest disagree level (8.23 % and 8.71%, respectively). Angadi(2014) and Akele(2013) reported that ICT provides a great flexibility in education to ensure that, learners are able to access knowledge regardless of space and time, and also observed that using ICT helps students to communicate, share ideas, and work as a team anywhere, anytime.

**Table 8: Purpose of Using ICT Resources by the Students in the Different States**

S.NO	Purpose	Andhra Pradesh (n=571)						Telangana (n=158)						Bihar (n=179)						Jharkhand (n=143)					
		Disagree		Neutral		Agree		Disagree		Neutral		Agree		Disagree		Neutral		Agree		Disagree		Neutral		Agree	
		F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	For research purpose (Thesis / Dissertation / Projects / articles)	41	7.18	39	6.83	491	85.9	17	10.76	4	2.53	137	86.71	18	10.05	21	11.73	140	78.21	6	4.20	18	12.59	119	83.22
2	For keeping up-to-date subject information	26	4.55	24	4.20	521	91.2	15	9.49	7	4.43	136	86.08	14	7.82	8	4.46	157	87.70	9	6.29	4	2.80	130	90.91
3	To gain current and general knowledge information	19	3.32	21	3.67	531	92.9	11	6.96	6	3.80	141	89.24	14	7.82	6	3.35	159	88.82	3	2.10	7	4.90	133	93.01
4	For seminar / workshop / conference presentation	32	5.60	42	7.35	497	87.0	7	4.43	7	4.43	144	91.14	18	10.05	23	12.8	138	77.09	10	6.99	9	6.29	124	86.71
5	For communication (To exchange ideas)	33	5.77	29	5.07	509	89.1	13	8.23	8	5.06	137	86.71	14	7.82	4	2.23	161	89.9	12	8.39	5	3.50	126	88.11
	Average	30.2	5.28	31	5.42	509.8	89.22	13	8.23	6	4.05	139	87.97	15.6	8.71	12.4	6.91	151	84.34	8	5.59	9	6.01	126	88.39

## CONCLUSIONS

The common ICT tools like interactive white board, television and projector were used daily by most of the students, while e-library and university website were occasionally used. Daily usage of ICT resources was more in Bihar followed by Jharkhand, Telangana and AP, however, the overall use of ICTs were poor in Jharkhand. The occasional usage of ICTs was more in AP followed by Telangana and at par in other two states. The availability of personal ICT tools is more in Jharkhand followed by Telangana, Bihar and AP. The availability of mobile/tablet is high in all states, while PC/Laptop and net connectivity is more with students of Jharkhand. Students of the different universities of study areas used Facebook and WhatsApp daily, while twitter and blog were occasionally used. Social media tools like Wikipedia, Google groups and Google plus were never used. The usage of social media tools was high with the students of the Bihar when compared with the students of the Jharkhand, Telangana and Andhra Pradesh. Majority of the students of all the universities agreed that ICTs were used mostly to gain current knowledge, up-to-date information followed research and communication.

It is recommended that, the common ICT infrastructure like computer, mobile, projector *etc.*, are available in all the universities in all the states. However, the availability of advanced ICT tools like tele & video conference, e-library, interactive white board *etc.*, need be improved in all the universities. The net facility in the campuses of all the Universities should be improved and the campuses should be made Wi-Fi campuses with high speed net round the clock. The other ICT tools like student report card system and e-portfolio should be made available in the universities. Convert traditional classrooms into digital classrooms in all the constituent colleges of the Universities, and the faculty should also be trained on the effective usage of digital classrooms.

Positive attitude towards ICTs is widely recognized as a necessary pre requisite for their effective usage and implementation. For creating positive attitude towards ICTs, the students and teachers should be oriented properly towards ICTs and their potential for effective teaching, learning and administration process, in all the Universities and adequate training programmes should be organized for achieving this goal.

Creating awareness of students and staff for advanced ICT tools like e-portfolio, tele & video conference *etc.* should be improved and accordingly, training programmes should be conducted. The usage of ICT common tools (mobile, computer, Ipad *etc.*) by the students was found to be daily however, orientation should be given to utilize these tools for academic interactions too rather than social interactions alone.

## ACKNOWLEDGEMENT

This article was based on the study funded under ICAR Extramural Research Project entitled, 'Impact of Information and Communication Technologies in Agricultural Education in India'. The financial support provided by the Education Division, Indian Council of Agricultural Research, and New Delhi is duly acknowledged. The support of students of seven Universities for taking active part in the survey is highly appreciated.

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